

REMARKS

Claims 1-25 are pending, of which Claims 1, 11, 21, 22 and 25 are independent. All claims have been rejected. For the reasons described below, all claims are in condition for allowance.

Regarding Double Patenting Rejections

Claims 1-25 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-10, 13-22 and 25-28 of co-pending Application No. 09/759697. Claims 7, 17 and 23 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1, 10, 19, 20 and 22 of co-pending Application No. 09/759695.

The Applicants wish to place this rejection in abeyance until the claims are otherwise allowable. Acceptance is respectfully requested.

Regarding Oath/Declaration

The Office has deemed that the declaration is defective because the signature date of the oath/declaration for the inventor (Stephen Ward) is missing.

As the Office no longer requires a newly executed oath or declaration where the date of execution has been omitted, the Applicants respectfully request that the declaration be accepted without the signature date for the inventor (Stephen Ward). (*See* MPEP 602.05.)

Regarding IDS

Applicant thanks the Examiner for acknowledging the IDS's filed on November 8, 2001 (OIPE postmarked 1/4/02), January 24, 2002 (OIPE postmarked 2/12/02), January 21, 2003 (OIPE postmarked 1/27/03) and September 8, 2003 (OIPE postmarked 9/10/03). Applicants also submitted an IDS (citing References AA-AC) on October 17, 2001. A copy of the postcard receipt (attached) indicates receipt by the PTO on October 19, 2001. A copy of the Examiner's acknowledgment of the PTO-1449 form corresponding to that IDS is respectfully requested.

Regarding the Specification

The abstract has been objected to because the first sentence of the abstract is not in narrative form and the abstract exceeds 150 words in length. In response, the abstract has been amended to place the first sentence in narrative form and to meet the 150 word limitation. Removal of the objection to the abstract is respectfully requested.

The discussion of [incr Tk] in the Specification at page 1, lines 14 through 19 has been amended to correct an error. In [incr Tk] there is preallocation of memory space for option values and the specification has been amended to correct any reference to the contrary. Thus, the Specification has been amended to correct a drafting error. No new matter is introduced. Acceptance is respectfully requested.

Regarding Rejection under 35 U.S.C. § 101

Claim 25 has been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 25 is now amended, and reconsideration is respectfully requested.

Claim 25 is amended by the present amendment to recite a software system which meets the requisites of statutory subject matter. Claim 25 now recites a software system that includes functional requirements, namely, computer-readable “instructions to define an object with defined fields to support values in preallocated memory space and with an option data structure which supports references to option values without preallocation of memory space for the full option values.” Therefore, it is respectfully requested that the rejection of Claim 25 based on 35 U.S.C. § 101 be withdrawn. Reconsideration and acceptance are respectfully requested.

Regarding Rejections under 35 U.S.C. § 103(a)

Claims 1, 11, 21, 22 and 25 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants’ Admitted Prior Art (APA) disclosed in the instant application. The rejections are traversed, and reconsideration is respectfully requested.

The background section of the Applicants’ specification discusses prior art techniques for storing property values that relate to the [incr Tk] language. In [incr Tk], there is preallocation of memory space for option values and the specification has now been amended to correct any

reference to the contrary. Because [incr Tk] does preallocate memory space for option values, and the claimed invention does not, the rejections based on [incr Tk] should be withdrawn.

Each base claim (Claims 1, 11, 21, 22 and 25) recites the foregoing patentable distinction with the claim limitation "... supports references to option values without preallocation of memory space ..."

The Examiner has taken Official Notice that the claimed technique for accessing a field value and accessing an option value in the object using expressions of the same syntactic form was well-known in the art of object oriented program development at the time the invention was made. Although the Examiner is correct in that in the object oriented programming prior art, a method call can be used to access property values of an object, the prior art does not discuss the claimed "accessing a field value stored in one of the defined fields and accessing an option value not stored in the defined fields ... using expressions of the same syntactic form." In other words, the prior art does not enable an option value to be accessed using the same native syntax that is used for accessing fields. This claim limitation is recited in each base Claim 1, 11, 21, 22 and 25, as now amended.

Furthermore, the cited art does not discuss the claimed "object with an option data structure, which supports references to option values without preallocation of memory space". Because the cited art does not imply or make obvious the elements of Claim 1, as now amended, the § 103 rejection of Claim 1 should be withdrawn. Similarly, the invention of Claims 11, 21, 22 and 25 are not discussed in the prior art, and therefore, the § 103 rejection of Claims 11, 21, 22 and 25 should be withdrawn.

Claims 2 through 25 have been rejected under 35 U.S.C. § 103 in view of APA and Deitel alone or in combination with various other references by Hostetter et al. and Muchnick. Deitel, Hostetter et al. and Muchnick, however, do not add to APA the above argued

(i) object with an option data structure which supports references to option values without preallocation of memory space, and/or

(ii) accessing a field value stored in one of the defined fields and accessing an option value not stored in the defined fields ... using expressions of the same syntactic form.

Thus, no combination of the cited references make obvious the claimed invention of Claims 1-25. Dependent Claims 2-10, 12-20 and 23-24 inherit the claim limitations of their respective base Claims 1, 11 and 22.

Further, Claims 4-6, 8-10, 14-16, 18-20 and 24 have been rejected under 35 U.S.C. § 103 in view of Berry et al. (US Patent No. 5,732,271) and Hostetter et al.

Claims 4-6 and 8-10 are dependent on base Claim 1. Claims 14-16 and 18-20 are dependent on base Claim 11. Claim 24 is dependent as Claim 22. Thus, the foregoing arguments with respect to base Claims 1, 11 and 22 in view of Hostetter et al. and the below arguments with respect to Berry et al. apply here. Neither Berry et al. nor Hostetter et al. imply or suggests the claimed features of:

- defining an object with defined fields to support values in preallocated memory space and with an option data structure which supports references to option values without preallocation of memory space for the full option values; and
- accessing a field value stored in one of the defined field and accessing an option value not stored in the defined fields in the object using expressions of the same syntactic form

as in amended base Claim 1, and similarly set forth in base Claims 11, 21, 22 and 25, respectively.

Therefore, no combination of Berry and Hostetter et al. make obvious the claimed inventions of Claims 4-6, 8-10, 14-16, 18-20 and 24. As such, the § 103 rejection of these claims should be withdrawn.

Accordingly, Claims 1-25 and their respective dependent claims are in condition for allowance. Removal of the rejections under 35 U.S.C. § 103(a) and acceptance of Claims 1-25 is respectfully requested.

Regarding Rejections under 35 U.S.C. § 102(b)

Claims 1-3, 7, 11-13, 17, 21-23, and 25 have been rejected under 35 U.S.C. § 102(b) based on Berry et al. (U.S. Patent No. 5,732,271). The rejections are traversed. Reconsideration is respectfully requested.

Preferred embodiments of the invention relate to a technique that enables an object to be defined with an option data structure, which supports references to option values, without preallocation of memory for the full option value. Preferably, the same syntactic expression, such as a variable name and operator, is used to access field values and option values, regardless of whether the values are stored in a field or an option data structure. Although the same syntactic notation is used to access a value in an object that is stored either in a field or an option data structure, the use of option values has a different time/space tradeoff. For example, storage space is not allocated for an option value that has been defined in an object until the value is actually set on the object.

By way of contrast, Berry is silent as to how memory is allocated. Although Berry relates to a graphical hierarchy, Berry does not discuss the claimed technique for defining an object with an option data structure that supports references to option values without preallocation of memory for full option values. It appears that Berry is consistent with traditional object-oriented techniques, as Berry does not suggest modifying them in any way. Therefore, in Berry, memory space is presumably preallocated in an object for each value that can be set on the object, similar to traditional object-oriented languages, regardless of whether the value has been set on the object. As a result, a preallocated field is provided for each of the potential properties of an object when the object is created, even if the field is never set on the object. Even when this field is not set, it still occupies its own dedicated memory space in the object.

While it is true that some types of attribute values (such as variable-length character strings) may require additional allocation when they are set, even in those cases, the object upon which the attribute value can be set must have a preallocated field (typically 4 bytes) to contain the address of the additional storage allocated for the attribute value. Berry does not discuss or disclose any technique for avoiding the memory preallocation of this basic field, which is plainly shown as the field "fBackground" in Berry's coding example at col. 5, ll. 1-12. Even if the amount of preallocated storage per object is only 4 bytes for each attribute value that could be set on the object, storage space considerations can still become significant when a large number of attribute values can potentially be set in an object. As such, Berry does not relate to the claimed

technique for defining an object with an option data structure that supports references to option values without preallocation of memory space for the full option values.

Moreover, Berry does not discuss a technique that uses the same syntactic form for accessing values stored in a field or option data structure. By way of background, field values and option values may be accessed in different ways. For example, a field value can be accessed directly in the field in the object. In contrast, an option value is accessed indirectly through the options data structure, which supports references to option values. Although, the values are accessed differently, the Applicants' claimed invention allows the use of expressions of the same syntactic form to access either the field value or the option value. For illustrative purposes, consider, the expression "c.y", where "c" represents an instance of a class and "y" represents the name of a value, the value can thereby be accessed using the "c.y" expression regardless of whether the value is stored in a field or an option data structure. This ability to use expressions of the same syntactic form to access all property values provides a certain amount of flexibility and efficiency when programming. Conversely, Berry does not discuss the claimed technique for accessing option values and field values using the same syntactic form.

As such, it is respectfully submitted that the Examiner has not made a prima facie case under 35 U.S.C. § 102(b), because Berry does not teach every aspect of the claimed invention, namely:

- defining an object with defined fields to support values in preallocated memory space and with an option data structure which supports references to option values without preallocation of memory space for the full option values; and
- accessing a field value stored in one of the defined field and accessing an option value not stored in the defined fields in the object using expressions of the same syntactic form

as in amended base Claim 1, and similarly set forth in base Claims 11, 21, 22 and 25, respectively.

Therefore, it is respectfully requested that the rejections of independent Claims 1, 11, 21, 22 and 25, and their respective dependent claims (namely, Claims 2-3, 7, 12-13, 17 and 23), under 35 U.S.C. 102(b) based on Berry be withdrawn.

CONCLUSION

In view of the above amendments and remarks, it is believed that all pending claims (Claims 1-25) are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By Mary Lou Wakimura
Mary Lou Wakimura
Registration No. 31,804
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, MA 01742-9133

Dated: 6/22/04